INDEX TO VOLUME XV, 1903.

PAGE.

Accessories, Effect of modern, on size and cost of warships..... 350
Admirals, British, Views on in-turning *vs.* out-turning screws..... 433
Admiralty scheme of training naval officers..... 144
Alloys, Improvement in manufacture..... 196
Association Notes.....279, 606

Babcock & Wilcox boilers, U. S. S. *Marietta*..... 59
Ball, Walter, Lieutenant, U. S. N.—Contract trial of the U. S. torpedo-boat destroyers *Lawrence* and *Macdonough*..... 667
Battleships, Maneuvering qualities of in-turning *vs.* out-turning screws, 433
Bayley, Warner B., Commander, U. S. N.—Alloys, Improvement in manufacture..... 196
Beecher, A. M.—Obituary..... 1256
Bevington, Martin.—Obituary..... 1255
Bieg, F. C., Lieutenant Commander, U. S. N.—Official trial of U. S. S. *Missouri*..... 1185
Boats in reserve, torpedo, Care of..... 756
Boiler, Characteristics of Normand water-tube..... 1065
Boiler laws of the U. S. Steamboat Inspection Service, Revision of..... 382
Boiler, Niclausse..... 1163
Boiler problem, The naval..... 207
Boiler question in France, Merits of large and small tubes for boilers... 449
Boiler tubes, Seamless steel..... 417
Boiler, Yarrow, Development for use in battleships..... 834
Boilers, Babcock & Wilcox, U. S. S. *Marietta*..... 59
Boilers for naval vessels, Water-tube *vs.* cylindrical..... 923
Boilers of *Maine*, Report of board of naval officers on boilers..... 951
Bowers, F. C., Lieutenant Commander, U. S. N.—General description and official trial of U. S. S. *Cleveland*..... 1110
British Admiralty scheme of training naval officers..... 144
Bush, W. W., Lieutenant, U. S. N.—Contract trial of U. S. S. *Wyoming*..... 83

Care of torpedo boats in reserve..... 756
Carney, R. E., Assistant Engineer (retired), U. S. N.—Comparison of the performances of the *Arkansas*, *Florida*, *Nevada* and *Wyoming*, 823; Translation, Direction of rotation of propellers..... 1080

Castings, steel 122
Cathcart, W. Ledyard.—Water-tube *vs.* cylindrical boilers for naval vessels 923
Cavite steel floating drydock 472
Cleveland, protected cruiser, official trial 1110
Coal consumption curves 366
Coaling at sea 1057
Comparison of performances of *Arkansas*, *Florida*, *Nevada* and *Wyoming* 823
Cooley, Mortimer E.—New engineering buildings, University of Michigan 908
Corrugated furnaces, Test of Brown's improved type 182
Crush William.—Development of the Yarrow boiler for use in battleships 834
Cunningham, A. C., Civil Engineer, U. S. N.—Coaling at sea, 1057; The Cavite steel floating drydock 472
Cunningham-Seaton.—Proposed method coaling at sea 1057
Curves, speed and coal consumption 366

Davison, G. C., Lieutenant, U. S. N.—Care of torpedo boats in reserve, 756
Development of the Yarrow boiler for use in battleships 834
Dinger, Henry C., Ensign, U. S. N.—Performance of B. & W. boilers as installed in U. S. S. *Marietta* 59
Direction of rotation of propellers 1080
Direction of rotation of propellers on twin-screw war vessels 1175
Dock, Cavite steel floating 472
Docks, floating dry, their military possibilities and value 1
Drydock, Cavite steel floating 472
Durand, W. F.—Problem connected with the screw propeller 887
Dyson, Charles W., Lieutenant, U. S. N.—Screw propellers of U. S. naval vessels 281

Eames, Hayden, Education and training of naval officers 902
Eaton, W. C., Lieutenant Commander, U. S. N.—Corrugated furnaces, 182
Education and training of naval officers 902
Education of naval officers for future needs 850
Engines, steam, The investigation of the stresses on frames of vertical inverted 19
Engines, turbine, U. S. S. *Revolution* 1241
Engineering building for University of Pennsylvania 578
Engineering buildings, University of Michigan 908
Engineering in the Navy 808
Engineers for future needs, Education of naval 850
Experiences with the U. S. torpedo boat *Goldsborough* 778
Experimental laboratory 512, 1040
Experimental tanks 967

Experiments.—The necessity of using large ships for determining the maneuvering qualities of in-turning and out-turning screws..... 433

Frames of vertical, inverted steam engines, The investigation of the stresses on..... 19
France, Naval boiler question of..... 449
Furnaces, corrugated..... 182

German Navy, Marine turbines for..... 603
Goldsborough, U. S. torpedo boat, Experiences with..... 778
Good Hope, H. M. S., Continued steaming performance compared with U. S. S. *Columbia*, 266; Voyage of..... 259
Great Lakes, The problem of building warships on..... 458

Halligan, John, Jr., Ensign, U. S. N.—The naval boiler problem, 207; A study of the Lake submarine torpedo-boat *Protector*..... 1211
Havana steel floating drydock, plan,..... 12
Hints on the inspection of steel..... 609
Hoffman, W. D.—Liquid fuel..... 231
Hohenstein boiler, An analysis of extended series of tests..... 207
Hollis, Ira N.—Engineering in the Navy..... 808
Hopkins, Description and trial of U. S. destroyer..... 694
Howe, Charles M.—Niclausse boiler..... 1163
Hull, Description and trial of U. S. destroyer..... 694

Inspection of steel, Hints on..... 609
In-turning *vs.* out-turning screws, Maneuvering qualities of..... 433

Jones, David Phillips.—Obituary..... 277

Laboratory, Engineering, to be established at the Naval Academy, its scope and purpose..... 512
Laboratory, Technical, of the Royal Technical High School of Berlin, 1040
Laubeuf, M., Chief Constructor, French Navy.—Notes on direction of rotation of propellers..... 1175
Lawrence, Contract trial of U. S. destroyer..... 667
Layman, Alfred C.—Description and trials of the U. S. torpedo-boat destroyers *Hopkins* and *Hull*..... 694
Leopold, H. G., Lieutenant, U. S. N.—Some experiences with the U. S. torpedo boat *Goldsborough*..... 778
Liquid fuel..... 231
Longstreth, Charles.—Metallic packings..... 404
Luxuries, Effect of size and cost of on warships..... 350

Macalpine, John H.—Description and trials of the U. S. torpedo-boat destroyers *Hopkins* and *Hull*..... 694

Macdonough, Contract trial of U. S. destroyer..... 667
Magoun, H. A.—U. S. torpedo-boat destroyers *Truxtun*, *Whipple* and *Worden*..... 393
Mahony, Daniel S., Lieutenant, U. S. N.—Official trials of the submarine boats *Plunger*, *Porpoise* and *Shark*, 859; Speed and coal consumption curves..... 366
Maine, Report of Board of U. S. Naval Officers on boilers of..... 951
Maneuvering qualities of battleships, in-turning *vs.* out-turning screws, 433
Manning, Charles H., Assistant Engineer, U. S. N. (retired).—Education of naval engineers for future needs..... 850
Mansfield, Newton, Lieutenant, U. S. N.—Seamless steel boiler tubes... 417
Marine turbines for German Navy..... 603
McKean, F. G., Chief Engineer, U. S. N.—Direction of rotation of propellers on twin-screw war vessels..... 1175
Mechanical laboratory of the Royal Technical High School of Berlin... 1040
Meier, E. D.—Revision of boiler laws of U. S. Steamboat Inspection Service..... 382
Melville, Geo. W., Rear Admiral, U. S. N.—In-turning *vs.* out-turning screws, 433; Military importance of naval engineering experiments.. 512
Mentz, Walter.—The Mechanical laboratory of the Royal Technical High School of Berlin..... 1040
Metallic Packings..... 404
Method of coaling at sea..... 1057
Meyer, John H. F.—Translation from "Zeitschrift des Vereins Deutscher Ingenieure," The investigation of the stresses on frames of vertical inverted steam engines.....19, 971
Missouri, U. S. battleship, official trial..... 1185
Morgan, Leo.—Destruction of steamship *Progreso*, 272; Official trials of submarine boats *Grampus* and *Pike*..... 584
Moritz, Albert, Lieutenant, U. S. N.—Contract speed trial of U. S. torpedo-boat destroyer *Stewart*, 111; Hints on the inspection of steel, 609; Official trial of U. S. S. *Florida*..... 546
Morley, A. W., Chief Engineer, U. S. N.—Obituary..... 604

Naval Academy, Scope and purpose of laboratory to be established at... 512
Naval boiler problem..... 207
Naval boiler question in France..... 449
Naval engineering experiments, laboratory to be established at Naval Academy..... 512
Naval engineers for future needs, Education of..... 850
Naval officers, British Admiralty scheme of training..... 144
Naval officers, Education and training of..... 902
Naval officers, Report of board on boilers of *Maine*..... 951
Naval vessels, Screw propellers of, 281; Water-tube *vs.* cylindrical boilers for..... 923
New Orleans floating drydock..... 11

Nickel-steel, Doubtful value of, for machinery..... 801
Niclausse boiler..... 1163
Normand water-tube boiler, characteristics of..... 1065
Notes, association.....279, 606, 922
Notice, JOURNALS on hand..... 1258
Notes.—Turbine engines for an Atlantic liner..... 1254

Obituary.—
Jones, David Phillips..... 277
Morley, A. W..... 604
Smith, David..... 919
Bevington, Martin..... 1255
Beecher, A. M..... 1256
Offley, C. N., Lieutenant, U. S. N.—Work of *Oregon* during Spanish-American War..... 1144
Oil fuel, The effect of explosion on steamship *Progreso*..... 272
Oregon, Work of during Spanish-American War..... 1144

Packings, metallic..... 404
Pecoraro, Nino.—Direction of rotation of propellers..... 1080
Problem connected with the screw propeller..... 887
Progreso, The destruction of..... 272
Propellers, Direction of rotation..... 1080
Propellers on twin-screw war vessels, Direction of rotation..... 1175
Propellers of U. S. naval vessels, Screws..... 281
Propulsion for naval and maritime purposes..... 637
Protector, submarine torpedo boat, Development of..... 1211

Quick, George, fleet engineer (retired), H. B. M. Navy.—Screw propulsion for naval and maritime purposes..... 637

Report of board of U. S. naval officers on boilers of U. S. S. *Maine*.... 951
Revision of boiler laws of steamboat inspection service..... 382
Revolution, Report concerning design, installation and operation of turbine engines..... 1241
Rotation of propellers..... 1080
Rotation of propellers on twin-screw war vessels..... 1175
Royal Technical High School of Berlin, Mechanical laboratory of..... 1040

Sadler, H. C.—Problem of building warships on great lakes..... 458
Schwarz, G., Oberturkheim-Stuttgart.—The investigation of the stresses on frames of vertical inverted steam engines.....19, 971
Screw propeller, Problem connected with..... 887
Screw propellers of U. S. naval vessels..... 281
Screw propulsion for naval and maritime purposes..... 637

Screws, In-turning *vs.* out-turning 433
Seamless steel boiler tubes..... 417
Smith, David, Rear Admiral, U. S. N., retired, Obituary..... 919
Spangler, H. W.—Engineering building for University of Pennsylvania.. 578
Speed and coal-consumption curves..... 366
Steamboat Inspection Service, Revision of boiler laws..... 382
Steel castings..... 122
Steel, Hints on inspection of..... 609
Stresses on frames of vertical inverted steam engines, The investigation of 19, 971
Submarine boats.—
Adder, official trial..... 39
Grampus, official trial..... 584
Moccasin, official trial..... 39
Pike, official trial..... 584
Plunger, official trial..... 859
Porpoise, official trial..... 859
Protector, development of..... 1211
Shark, official trial..... 859

Tanks, Experimental..... 967
Trials.—
Adder, submarine boat..... 39
Cleveland, protected cruiser..... 1110
Florida, U. S. battleship 546
Grampus, submarine boat..... 584
Hopkins, torpedo boat destroyer..... 694
Hull, torpedo boat destroyer..... 694
Lawrence, torpedo boat destroyer..... 667
Macdonough, torpedo boat destroyer..... 667
Missouri, U. S. battleship..... 1185
Moccasin, submarine boat..... 39
Pike, submarine boat. 584
Plunger, submarine boat..... 859
Porpoise, submarine boat..... 859
Shark, submarine boat..... 859
Stewart, U. S. torpedo boat destroyer..... 111
Wyoming, U. S. battleship..... 83
Torpedo-boat machinery, Experience and skill requisite to conduct trials..... 781
Torpedo boats, excessive cost of some..... 779
Torsional vibration of shafting..... 683, 725
Torpedo boats in reserve, Care of..... 756
Truxtun, U. S. destroyer, special characteristics..... 393
Tubes for boilers of cruisers and battleships..... 449
Tubes, Seamless steel boiler..... 417

Turbine engines of U. S. S. *Revolution*, Report concerning design, installation and operation of..... 1241
Turbine engines, Report of board concerning efficiency of..... 1247
Turbines for German Navy..... 603
Turbine tube cleaner..... 71

U. S. Steamboat Inspection Service, Revision of boiler laws..... 382
University of Michigan, Engineering buildings..... 908
University of Pennsylvania, Engineering building for..... 578

Vertical inverted steam engines, Investigation of stresses on frames of, 19
Vibration of torpedo-boat machinery.....682, 736, 783

Warships, Effect of modern accessories on size and cost of..... 350
Warships on the Great Lakes, The problem of building..... 458
Water-tube boiler, Characteristics of Normand..... 1065
Water-tube *vs.* cylindrical boilers for naval vessels..... 923
Water-tube boilers, B. & W., as installed in U. S. S. *Marietta*..... 59
White, William Russell, Lieutenant, U. S. N.—Official trials of submarine boats *Adder* and *Moccasin*..... 39
Whiting, W. H.—Effect of modern accessories on size and cost of warships..... 350
Whipple, U. S. destroyer, special characteristics..... 393
Willits, George S., Lieutenant Commander, U. S. N.—Steel castings... 122
Worden, U. S. destroyer, special characteristics..... 393

Yarrow boiler, development for use in battleships..... 834

OFFICERS AND MEMBERS

AMERICAN SOCIETY OF NAVAL ENGINEERS.

1903.

AMERICAN SOCIETY OF NAVAL ENGINEERS—1903.

OFFICERS FOR 1903.

President:

Lieutenant Commander **Wythe M. Parks**, U. S. Navy.

Secretary and Treasurer:

Lieutenant Commander **John R. Edwards**, U. S. Navy.

Council:

Captain **George W. Baird**, U. S. Navy.
Lieutenant Commander **John R. Edwards**, U. S. Navy.
Lieutenant Commander **Wythe M. Parks**, U. S. Navy.
Lieutenant Commander **J. Schell**, U. S. Navy.
Lieutenant **C. W. Dyson**, U. S. Navy.

HONORARY MEMBERS.

The Secretary of the Navy.....Navy Department.
The Assistant Secretary of the Navy.....Navy Department.
Geo. W. Melville, Engineer-in-Chief, U. S. N.....Navy Department.
Chas. H. Haswell, Consulting and Superintending Engineer....324 West 78th street, New York.
B. F. Isherwood, Chief Engineer, U. S. N. (retired).....111 East 36th street, New York.
J. W. King, Chief Engineer, U. S. N. (retired).....3231 Powellton avenue, Philadelphia.
Chas. H. Loring, Chief Engineer, U. S. N. (retired).....239 Clermont avenue, Brooklyn.
Wm. H. Shock, Chief Engineer, U. S. N. (retired).....1404 15th street, Washington, D. C.

Prize Essayists.

W. W. White (1897), Lieutenant, U. S. N.
W. F. Durand (1899), Principal, School of Marine Construction, Cornell University, Ithaca, N. Y.
B. C. Ball (1899).....Willamette I. & S. Works, Portland, Oregon.
W. F. Worthington (1900), Lieutenant Commander, U. S. N.
J. R. Edwards (1901), Lieutenant Commander, U. S. N....Bureau Steam Engineering, Navy Dept.

MEMBERS.

Addicks, W. R., Vice President Consolidated Gas Company....No. 4 Irving Place, New York City
Aldrich, Wm. S., Professor of Engineering.....Clarkson School of Technology, Potsdam, N. Y.
Allderdice, W. H., Lieutenant Commander, U. S. N.
Allen, F. B., Vice-Pres. Hartford Steam Boiler Insp. and Ins. Co.,
Residence, 61 Willard street, Hartford, Conn.
Anderson, M. A., Lieutenant, U. S. N.
Andrade, Cipriano, Rear Admiral, U. S. N. (retired),
Union League, Broad and Sansom streets, Philadelphia, Pa.
Aston, Ralph, Rear Admiral, U. S. N. (retired).....78 Hanson Place, Brooklyn, N. Y.
Ayres, S. L. P., Chief Engineer, U. S. N. (retired).....1420 Master st., Philadelphia, Pa.

Bailey, F. H., Lieutenant Commander, U. S. N.
Baird, G. W., Captain, U. S. N.....Navy Dept., Washington, D. C.
Baker, Frederick W......Station D, Baltimore, Md.
Ball, Walter, Lieutenant, U. S. N.

Barrows, H. C., Chief Engineer, U. S. R. C. S.....U. S. S. *Morrill*, Milwaukee, Wis.
Barry, Ralph E.....Hotel Franklin, 1904 Market street, San Francisco, Cal.
Bartlett, F. W., Lieutenant Commander, U. S. N.
Barton, J. K., Commander, U. S. N.....Naval Academy, Annapolis, Md.
Bates, A. B., Captain, U. S. N.
Baxter, W. J., Naval Constructor, U. S. N.....New York Shipbuilding Co., Camden, N. J.
Bayley, W. B., Commander, U. S. N.....Care Colt Fire Arms Co., Hartford, Conn.
Beach, E. L., Lieutenant, U. S. N.
Beecher, A. M., Lieutenant, U. S. N.
Benham, H. K., Lieutenant, U. S. N.
Bennett, F. M., Lieutenant Commander, U. S. N.,
U. S. R. S. *Franklin*, Navy Yard, Norfolk, Va.
Bevington, Martin, Lieutenant Commander, U. S. N.
Bieg, F. C., Lieutenant Commander, U. S. N.
Borthwick, J. L. D., Chief Engineer, U. S. N. (retired).....Care Erie Public Library, Erie, Pa.
Bowers, F. C., Lieutenant Commander, U. S. N.....Bath Iron Works, Bath, Me.
Boyd, Jas. T., Consulting Engineer.....60 State street, Boston, Mass.
Brady, John R., Lieutenant, U. S. N.
Bray, Chas. D., Professor Civil and Mechanical Engineering.....Tufts College, Mass.
Brooks, W. B., Chief Engineer, U. S. N. (retired).....437 West 6th street, Erie, Pa.
Bryan, B. C., Lieutenant Commander, U. S. N.
Burgdorff, T. F., Lieutenant Commander, U. S. N.
Burke, W. S., Passed Assistant Engineer, U. S. N. (retired),
60 Buckingham street, Cambridge, Mass.
Bush, W. W., Lieutenant, U. S. N.

Canaga, A. B., Lieutenant Commander, U. S. N.,
U. S. S. *Connecticut*, Navy Yard, New York, N. Y.
Capps, W. L., Naval Constructor, U. S. N.....Navy Yard, New York.
Carr, C. A., Lieutenant Commander, U. S. N.....Care Moran Brothers, Seattle, Wash.
Carter, T. F., Lieutenant Commander, U. S. N.
Carney, R. E., Assistant Engineer, U. S. N. (retired),
Bureau Naval Intelligence, Navy Department, Washington, D. C.
Cathcart, W. L., Adjunct Professor Mechanical Engineering,
Columbia University, New York City.
Chambers, W. H., Lieutenant, U. S. N.
Chandler, Lloyd H., Lieutenant, U. S. N.
Cleaver, H. T., Lieutenant Commander, U. S. N.....New York Shipbuilding Co., Camden, N. J.
Collins, Jno. W., Captain of Engineers and Engineer-in-Chief Revenue Cutter Service.
Collins, Henry L.....Dallas avenue, Pittsburg, Pa.
Cone, Hutch I., Lieutenant, U. S. N.
Cook, Allen M., Lieutenant, U. S. N.
Cooley, Mortimer E., Professor Mechanical Engineering,
Ann Arbor University, Ann Arbor, Mich.
Cooper, I. T., Lieutenant, U. S. N.....Camden, Del.
Cowles, W. Barnum, Constructing Engineer.....Cor. Lake and Wason streets, Cleveland, Ohio.
Cox, Erskine Hazard.....1219 Locust street, Philadelphia, Pa.
Coxe, W. G.....Care Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
Crank, R. K., Lieutenant, U. S. N.....Care Babcock & Wilcox Co., Bayonne, N. J.
Crawford, Robt., Passed Assistant Engineer, U. S. N. (retired),
Box 384, Lansdowne, Delaware Co., Pa.
Creighton, W. H. P., Assistant Engineer, U. S. N. (retired),
1542 Calhoun street, New Orleans, La.

Danforth, Geo. W., Lieutenant, U. S. N. (retired).....Union Iron Works, San Francisco, Cal.
Davis, E. W., Second Assistant Engineer, U. S. R. C. S.....U. S. S. *McCulloch*, Saucelito, Cal.
Davis, Norris K., late Assistant Engineer, U. S. N.....1800 Broadway, San Francisco, Cal.
Davison, G. C., Lieutenant, U. S. N.

Day, W. B., Passed Assistant Engineer, U. S. N. (retired).....Navy Yard, New York.
Denig, R. G., Lieutenant Commander, U. S. N.
Dick, Thomas M., Lieutenant, U. S. N. (retired).....W. Raleigh, N. C.
Dinger, Henry C., Lieutenant U. S. N..... ..U. S. S. *Marietta*, Postmaster New York, N. Y.
Dismukes, D. E., Lieutenant, U. S. N.
Dixon, A. F., Commander, U. S. N.
Dowst, F. B., General Superintendent B. F. Sturtevant Co.....Jamaica Plain, Boston, Mass.
Dunlap, T. C..... .....651 Franklin avenue, Columbus, Ohio.
Dunning, Wm B., Chief Engineer, U. S. N. (retired)...530 California street, San Francisco, Cal.
Dyson, Charles W., Lieutenant, U. S. N.

Eaton, Wm. C., Lieutenant Commander, U. S. N.....Carbon Steel Works, Pittsburg, Pa.
Eaton, C. P., Lieutenant, U. S. N
Eckart, W. R., Mechanical Engineer.....3014 Clay street, San Francisco, Cal.
Eckhardt, E. F., Lieutenant, U. S. N.
Edson, Jarvis B., Mechanical Engineer.....313 W. 74th street, New York.
Edwards, W. R., Mechanical Engineer.....Care Buffalo Forge Co., Southbridge, Mass.
Eldridge, F. H., Lieutenant Commander, U. S. N.
Elson, H. J.....4956 Washington Boulevard, St. Louis, Mo.
Engard, A. C., Chief Engineer, U. S. N. (retired).....2131 N. 19th street, Philadelphia, Pa.
Evans, H. H., Ensign, U. S. N.

Farmer, Edward, Chief Engineer, U. S. N. (retired).....274 Newberry street, Boston, Mass.
Ferguson, Geo. R., Assistant Engineer, Department of Bridges,
1203 Park Row Bldg., New York.
Fisher, Clark, Civil and Mechanical Engineer.....Eagle Anvil Works, Trenton, N. J.
Fitch, H. W., Chief Engineer, U. S. N. (retired).....1518 Connecticut avenue, Washington, D. C.
Fitzgerald, E. T., Lieutenant, U. S. N.
Ford, Jno. D., Rear Admiral, U. S. N. (retired).
Freeman, E. R., Lieutenant Commander, U. S. N. (retired),
Hotel Buckingham, Washington, D. C.
French, D. McC., Chief Engineer, U. S. R. C. S.....Care Wm. Trigg & Co., Richmond, Va.
Fry, Alfred Brooks, U. S. Treasury Service, Lieutenant Commander, Naval Brigade, S. N. Y.,
Post Office Building, New York.

Gage, Howard, Lieutenant Commander, U. S. N.
Galt, Robert W., Chief Engineer, U. S. N. (retired).....Williamsburg, Va.
Garrison, Danl. M., Lieutenant, U. S. N.
George, H., Lieutenant, U. S. N..... Navy Department, Washington, D. C.
Gow, J. L., Lieutenant Commander, U. S. N.
Green, C. M., Chief Engineer, U. S. R. C. S.
Greene, Levi R., late First Assistant Engineer, U. S. N....35 Concord avenue, Cambridge, Mass.
Greene, D. M., Consulting Engineer.....41 First street, Troy, N. Y.
Griffin, R. S., Lieutenant Commander, U. S. N.
Gsantner, O. C., First Assistant Examiner, U. S. Patent Office;
Residence, 1708 New Jersey avenue, Washington, D. C.

Hall, H., Lieutenant Commander, U. S. N.
Hall, R. T., Lieutenant Commander, U. S. N.
Halligan, John, Jr., Ensign, U. S. N.....U. S. T. B. *Rogers*, Washington, D. C.
Halstead, A. S., Lieutenant, U. S. N.
Hanford, Franklin, Captain, U. S. N.....Scottsville, N. Y.
Hartrath, Armin.....Fairbank Building, 60 Wabash avenue, Chicago, Ill.
Hasbrouck, R. D., Lieutenant, U. S. N.
Hayes, Charles H., Lieutenant, U. S. N.
Herbert, W. C., Lieutenant, U. S. N.
Hibbs, F. W., Naval Constructor, U. S. N.....Navy Yard, Bremerton, Washington.
Higgins, R. B., Lieutenant, U. S. N.

Hollis, Ira N., Professor of Engineering, Harvard University.....Cambridge, Mass.
Holmes, U. T., Lieutenant, U. S. N.
Howe, Chas. M......Care Evanston Yaryan Co., 815 Grove street, Evanston, Ill.
Hunt, A. M., Consulting Engineer.....310 Sansome street, San Francisco, Cal.

Inch, Richard, Captain, U. S. N.....Newport News S. B. & D. D. Co., Newport News, Va.

Johnson, A. W., Ensign, U. S. N.
Jones, Horace W., Lieutenant, U. S. N.

Kaemmerling, Gustav, Lieutenant, U. S. N.
Kafer, John C., Passed Assistant Engineer, U. S. N. (retired), 374 Fifth avenue, New York City.
Kearney, George H., Commander, U. S. N.....Navy Yard, Boston, Mass.
Keilholtz, Pierre O., Chief Engineer, City and Suburban Railway Co.....Baltimore, Md.
Kelley, Daniel F., Chief Engineer, U. S. R. C. S.
Kellogg, Edw. S., Lieutenant, U. S. N.
King, W. R., Passed Assistant Engineer, U. S. N. (retired),
President Baltimore Polytechnic Institute.....The "St. Paul," Baltimore, Md.
Kinkaid, T. W., Lieutenant Commander, U. S. N.
Kirby, Absalom, Chief Engineer, U. S. N. (retired).....405 C street, S. E., Washington, D. C.
Koester, O. W., Lieutenant, U. S. N.....Navy Yard, New York.
Kohler, Geo. M., U. S. R. C. S.,
Revenue Marine Division, Treasury Department, Washington, D. C.
Kutz, George F., Chief Engineer, U. S. N. (retired)..... .....1232 Madison street, Oakland, Cal.

Laws, G. W., Lieutenant, U. S. N.
Leavitt, E. D., Mechanical Engineer.....2 Central Square, Cambridgeport, Mass.
Leiper, C. L......Idaho City, Idaho.
Leonard, J. C., Lieutenant, U. S. N.....U. S. S. *Columbia*, Navy Yark, New York.
Leonard, S. H., Jr., Lieutenant Commander, U. S. N.
Leopold, H. G., Lieutenant, U. S. N.
Lincoln, G. S., Lieutenant, U. S. N.
Linnard, Joseph H., Naval Constructor, U. S. N.....Navy Department, Washington, D. C.
Little, W. N., Lieutenant Commander, U. S. N.
Livermore, C. W., Assistant Engineer, U. S. N. (retired).....P. O. Box 376, Pasadena, Cal.
Loyd, John.....558–562 Water street, New York.
Lowe, John, Rear Admiral, U. S. N. (retired).....Lowecroft, Noroton, Conn.
Lyon, Frank, Lieutenant, U. S. N.,
U. S. S. *El Cano*, care Commander U. S. Naval Force, Asiatic Station, Manila, P. I.,
Via, P. O. San Francisco, Cal.

McAllister, Charles A., Chief Engineer, U. S. R. C. S.,
Revenue Marine Division, Treasury Department, Washington, D. C.
McAlpine, Kenneth, Lieutenant, U. S. N.
McCutchen, J. F., late Chief Engineer, U. S. N.....2206 N. 15th street, Philadelphia, Pa.
McDonald, J. E., Assistant Naval Constructor, U. S. N.
McElmell, Jackson, Chief Engineer, U. S. N. (retired)...1931 Spring Garden st., Philadelphia, Pa.
McElroy, G. W., Lieutenant Commander, U. S. N.
McFarland, W. M., Assistant General Manager,
Westinghouse Electric and Manufacturing Co., Pittsburg, Pa.
McGrann, W. H., Lieutenant, U. S. N.
McKean, Fred G., Chief Engineer, U. S. N. (retired),
1220 New Hampshire avenue, N. W., Washington, D. C.
McKean, J. S., Lieutenant, U. S. N.....Naval Academy, Annapolis, Md.
McMorris, B. K......Wetumpka, Ala.
Maccoun, W. E., First Assistant Engineer, U. S. R. C. S.,
U. S. R. S. *Gresham*, Tompkinsville, S. I., N. Y.
Macomb, D. B., Chief Engineer, U. S. N. (retired),
Care Prof. G. H. Bull, Hampden street, University Heights, New York, N. Y.

Magee, E. A., Chief Engineer, U. S. N. (retired).....187 Marcy avenue, Brooklyn, N. Y.
Magee, Geo. W., Chief Engineer, U. S. N. (retired).....187 Marcy avenue, Brooklyn, N. Y.
Mahony, D. S., Lieutenant, U. S. N.
Mallory, C. K., Lieutenant, U. S. N.
Manning, Chas. H., Passed Assistant Engineer, U. S. N. (retired),
General Superintendent Amoskeag Manufacturing Co.....Manchester, N. H.
Mansfield, Newton, Lieutenant, U. S. N.
Inspector of Engineering Material, care Shelby Steel Tube Co., Shelby, Ohio,
Mathews, C. H., Lieutenant, U. S. N.
Mattice, A. M., Mechanical Engineer.....4924 Center avenue, East End, Pittsburg, Pa.
Miller, W. G., Lieutenant, U. S. N.
Milligan, R. W., Captain, U. S. N.....Navy Yard, Norfolk, Va.
Moody, Roscoe C., Lieutenant, U. S. N.
Moore, Wm. S., Commander, U. S. N.
Morgan, Leo, Mechanical Engineer.....18 Hill street, San Francisco, Cal.
Moritz, Albert, Lieutenant, U. S. N.
Morley, A. W., Chief Engineer, U. S. N. (retired).....668 Greene avenue, Brooklyn, N. Y.
Moses, S. E., Lieutenant, U. S. N.
Munroe, C. W., Chief Engineer, U. S. R. C. S.....U. S. S. *Dallas*, New London, Conn.

Nauman, Wm. H., Commander, U. S. N.
Nones, Henry B., Chief Engineer, U. S. N. (retired).....1107 Franklin street, Wilmington, Del.
Nonnan, A. C., First Assistant Engineer, U. S. R. C. S.....U. S. S. *Tybee*, Savannah, Ga.
Norton, H. P., Lieutenant Commander, U. S. N.
Nulton, Louis M., Lieutenant, U. S. N.

Offley C. N., Lieutenant, U. S. N.

Palmer, J. E., Lieutenant, U. S. N.
Parks, W. M., Lieutenant Commander, U. S. N.....Navy Department, Washington, D. C.
Patton, J. B., Lieutenant, U. S. N.
Paul, Geo. H., Warrant Machinist, U. S. N.
Pemberton, John, Passed Assistant Engineer, U. S. N. (retired),
24 Hawthorne avenue, E. Orange, N. J.
Pickrell, J. M., Lieutenant, U. S. N. (retired).....1119 West avenue, Richmond, Va.
Pollock, E. R., Lieutenant, U. S. N.
Potts, Stacy, Lieutenant Commander, U. S. N.
Powers, W. A., Superintendent of Steam Boilers.....Municipal Dept. Building, Brooklyn, N. Y.
Price, C. B., Lieutenant, U. S. N.
Price, H. B., Lieutenant, U. S. N.
Procter, A. M., Lieutenant, U. S. N.

Rae, Charles Whiteside, Captain, U. S. N.....Navy Department, Washington, D. C.
Ransom, G. B., Commander, U. S. N.....Navy Yard, Portsmouth, N. H.
Redgrave, DeWitt C., Lieutenant, U. S. N.
Reed, Milton E., Lieutenant, U. S. N.
Reeves, I. S. K., Lieutenant Commander, U. S. N.
Reeves, Jos. M., Lieutenant, U. S. N.
Reid, R. I., Lieutenant Commander, U. S. N. (retired).....719 French street, Erie, Pa.
Rice, Geo. B.....Sewickley, Allegheny Co., Pa.
Roberts, Edward E., President, The Roberts Safety Water-Tube Boiler Co.,
39 and 41 Cortlandt street, New York.
Robison, John K., Lieutenant, U. S. N.
Roche, G. W., Chief Engineer, U. S. N. (retired).....1304 McCulloh street, Baltimore, Md.
Roelker, C. R., Captain, U. S. N.....1434 Q street, N. W., Washington, D. C.
Roller, F. W., Consulting Engineer.....903 Broadway, New York City.
Rommell, C. E., Lieutenant, U. S. N.
Ross, T. W., Mechanical Engineer.....114 34th street, Newport News, Va.
Ryan, J. P. J., Lieutenant, U. S. N.

Salisbury, G. R., Lieutenant Commander, U. S. N.
Sampson, B. C., Lieutenant, U. S. N.....Navy Yard, Norfolk, Va.
Selfridge, J. R., late U. S. N....Care British Westinghouse Co., Shore Road, Birkenhead, England.
Schell, F. J., Lieutenant Commander, U. S. N.....Naval Academy, Annapolis, Md.
Scott, J. Alvah, Marine Expert, Quartermaster's Depot, U. S. A.,
Army Building, New York City.
Scribner, E. H., Lieutenant Commander, U. S. N.....Fore River Iron Works, Quincy, Mass.
Sheffield, F. L., Lieutenant, U. S. N.
Sims, Gardiner C .....Care Wm. A. Harris S. E. Co., Providence, R. I.
Slayton, H. O., 1st Assistant Engineer, U. S. R. C. S.....Stoneham, Mass.
Sloane, John D., Assistant Engineer, U. S. N. (retired).....Dubuque, Iowa.
Smith, David, Chief Engineer, U. S. N. (retired).....1714 Conn. avenue, Washington, D. C.
Smith, J. A. B., Captain, U. S. N.....Navy Yard, New York, N. Y.
Smith, S. L......90 Elm Hill avenue, Boston, Mass.
Smith, Stuart F., Naval Constructor, U. S. N.
Smith, W. Strother, Lieutenant Commander, U. S. N.,
Newport News Shipbuilding Co., Newport News, Va.
Smith, W. Stuart, Assistant Engineer, U. S. N. (retired).....2538 Dwight Way, Berkely, Cal.
Snow, Elliot, Naval Constructor, U. S. N.....Hong Kong, China, care of Postmaster,
San Francisco, Cal.
Spangler, Henry W., Prof. Mechanical Engineering...University of Pennsylvania, Philadelphia
Stevenson, H. N., Commander, U. S. N.....Care Union Iron Works, San Francisco, Cal.
Stickney, Herman O., Lieutenant, U. S. N.
Strong, Frank L., Consulting Engineer.....Manila, P. I.

Tawresey, John G., Naval Constructor, U. S. N.....Union Iron Works, San Francisco, Cal.
Taylor, R. D., Passed Assistant Engineer, U. S. N. (retired)...3212 Haverford ave., Philadelphia.
Taylor, Walter.....Llewellyn Iron Works, Los Angeles, Cal.
Theiss, Emil, Lieutenant, U. S. N.
Tobin, J. A., Engineer Corps, U. S. N. (retired).....32 Vine street, East Providence, R. I.
Towne, N. P......Hotel Gladstone, Philadelphia.
Trench, M. E., Lieutenant, U. S. N.
Trilley, Joseph, Rear Admiral, U. S. N.....2847 Fillmore street, San Francisco, Cal.
Turner, J. B., First Assistant Engineer, U. S. R. C. S...Steamer *Gresham*, Tompkinsville, N. Y.

Van Duzer, Louis S., Lieutenant Commander, U. S. N.
Varney, W. H., Naval Constructor, U. S. N. (retired)..... 712 N. Carey street, Baltimore, Md.

Warburton, Edgar T., Lieutenant Commander, U. S. N.
Warren, B. H., Assistant Engineer, U. S. N. (retired).....Alberene, Albemarle County, Va.
Webster, H., Rear Admiral, U. S. N.....309 West Franklin street, Richmond, Va.
Wells, Chester, Lieutenant, U. S. N.
White, W. R., Lieutenant, U. S. N.
Whitham, Jay M., Consulting Engineer.....607 Bullitt Building, Philadelphia.
Williamson, John D. (late Chief Engineer, U. S. N.),
Williamson Bros., Engineers, Aramingo avenue and Cumberland street, Philadelphia, Pa.
Willits, A. B., Lieutenant Commander, U. S. N.
Willits, Geo. S., Lieutenant Commander, U. S. N.
Wilson, F. A......140 Beacon street, Boston, Mass.
Windsor, W. A., Rear Admiral, U. S. N. (retired).....Babcock & Wilcox Co., Bayonne, N. J.
Winchell, Ward P., Lieutenant, U. S. N.
Wood, B. F., Chief Engineer, U. S. N. (retired).....213 N. Fulton avenue, Mount Vernon, N. Y.
Wood, Jos. L., Assistant Engineer, U. S. N. (retired).....Ivy Depot, Va., via C. & O. R. R.
Woodward, J. J., Naval Constructor, U. S. N.....702 17th street, N. W., Washington, D. C.

Zane, A. V., Lieutenant Commander, U. S. N.

ASSOCIATES.

Aborn, George Pennell, Constructing Engineer, Geo. F. Blake Mfg. Co., 3d street, E. Cambridge, Mass.
Allen, Arthur P., Marine Engineer.....104 New York Block, Seattle, Washington.
Allen, F. S., Chief Inspector, Hartford S. B. Insp. & Ins. Co.....218 Main street, Hartford, Conn.
Allen, J. M., President, Hartford S. B. Insp. & Ins. Co.....Hartford, Conn.
Allen, R. H......Care Fore River S. and E. Co., Quincy, Mass.
Almy, Darwin, President and Treasurer, Almy Water-Tube Boiler Co., 178 to 184 Allen avenue, Providence, R. I.
Archambault, C. V., Chief Draftsman with the James Clark Co., Baltimore, Residence, 234 East Montgomery street, Baltimore, Md.
Arentz, H. S., Supervising Engineer, R. Norwegian Navy.....Horten, Norway.
Arnold, G. L. H.....Box 306, Catasauqua, Pa., and Box 1, Stamford, Conn.

Babcock, W. I......719 Maritime Building, Battery Park, New York City.
Bailey, Charles F., Chief Engineer, Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Bailey, W. H., Agent, American Tube Works.....20 Gold street, New York.
Barr, W. L., Supt. Engineer, Metropolitan S. S. Co.....Pier 11, North River, New York City.
Battin, T. Wilson.....Box 207, Philadelphia, Pa.
Beavor-Webb, J., Naval Architect and Engineer.....11 Broadway, New York.
Behr, Vladimir, Captain I. R. N., Cruiser *Variag*.....Care Russian Consul, Hong Kong, China.
Belcher, A. W., Superintendent Repair Shops, Cornell Steamboat Co.....Rondout, N. Y.
Biles, J. Harvard, Professor Naval Architecture, University of Glasgow.....Glasgow, Scotland.
Binney, Arthur, Naval Architect.....50 State street, Boston, Mass.
Bissell, G. W., Professor of Mechanical Engineering, Iowa State College.....Ames, Iowa.
Blomberg, C. A., Marine Engineer...Care Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
Bolton, Reginald Pelham.....35 Nassau street, N. Y.
Brinton, F. S.....P. O. Box 24, Mariners' Harbor, Staten Island, N. Y.
Brooker, Chas. F., President, Coe Brass Mfg. Co.....Torrington, Conn.
Brown, J. E., President Altman & Taylor Machinery Co.....Mansfield, Ohio.
Burgess, W. Starling, Naval Architect.....15 Exchange street, Boston, Mass.
Burnham, Capt. W. D., Manager American-Hawaiian S. S. Co., Maritime Building, 8 Broadway, New York City.
Bushnell, Fred. N., Mechanical Engineer.....3 South street, Providence, R. I.
Busley, Carl, Professor, Geheimer Regierungsrath...Kronprinzen Ufer 2, Berlin, N. W., Germany.

Calder, C. B., Superintendent, Dry Dock Engine Works.....Detroit, Mich.
Caldwell, Andrew J., Gen. Superintendent Crane Co.....12th and Canal streets, Chicago, Ill.
Campbell, J......Care Messrs. C. A. Campbell & Co., 59 Congress street, Boston, Mass.
Carnes, W. F., Mechanical Engineer...Care The Harlan and Hollingsworth Co., Wilmington, Del.
Carpentier, G. J. V., Chief Draftsman, Department of Steam Engineering, Navy Yard, Norfolk, Va.
Christopher, J. Carstairs.....1826 Bolton street, Baltimore, Md.
Coleman, Edward P......Consolidated Lighting Co., Montpelier, Vt.
Coleman, Geo. F.....118 Archer avenue, Mount Vernon, N. Y.
Conradson, C. M......New York Shipbuilding Co., Camden, N. J.
Cop, Huibert, Naval Constructor 1st Class, Dutch Navy, Professor R. Polytechnic School, Delft, Holland.
Cox, Irving, Naval Architect.....1 Broadway, New York.
Cramp, Benjamin H., Brass Founder.....York and Thompson streets, Philadelphia.
Cramp, Courtland D., Brass Founder.....York and Thompson streets, Philadelphia.
Cramp, Edwin S., Superintending Engineer...Wm. Cramp & Sons' S. & E. B. Co., Philadelphia.
Cramp, Walter S.....52 Broadway, New York City.
Currier, John A., Marine Engineer.....14 Parson street, West Newton, Mass.
Cust, Leopold, Engineer.....99 Onslow Square, S. W., London, England.

Davidson, Marshall T., Marine and Mechanical Engineer....43 to 53 Keap street, Brooklyn, N. Y.
Davis, H. S.....Care Wm. Cramp & Sons, Philadelphia.
Davis, Chas. H., Civil Engineer.....Room 924, 25 Broad street, New York.
Davis, Leonard D......Residence, 2668 Peach street, Erie, Pa.
deKinder, J. J., Consulting Engineer and Attorney at Law .....Girard Building, Philadelphia, Pa.
Delanoy, Chas. E......The Snow Steam Pump Works, 91 Liberty street, New York.
De Long, H. W......P. O. Box 1036, Bath, Maine.
Denton, Wm.....Swan & Hunter, Newcastle-on-Tyne, England.
Detrick, H. L......Department of Steam Engineering, Navy Yard, Mare Island, Cal.
Dickey, William D., General Superintendent of The John N. Robins Co.,
15 Whitehall street, New York.
Dickinson, Randall T., Superintending Constructor,
Delaware River Iron Shipbuilding and Engine Works, Chester, Pa.
Dingwall, N. W.....Townsend-Downey S. B. Co., 12 Broadway, New York City.
Dow, George E., President, Geo. E. Dow Pumping Engine Co.,
179 First street, San Francisco, Cal.
Drewett, W. A., Superintendent Davidson's Pump Works,
Residence, 202 Rutledge street, Brooklyn, N. Y.
DuBosque, F. L., Assistant Engineer, Floating Equipment, Pennsylvania Railroad Co.,
Jersey City, N. J.
Dunell, George R., Civil Engineer.....7 Spencer Road, Chiswick, W., England.

Edwards, Chas. B., Superintendent of Engineering, Fore River Engine Co.....Quincy, Mass.
Edwards, Edmund B., Assistant Superintending Engineer,
Boston Tow Boat Co., E. Boston, Mass.
Eiseman, Capt. George, Superintendent Marine Department N. Y. C. and H. R. R.,
10 Broadway, New York.
Elgar, Francis, LL. D., Naval Architect.....34 Leadenhall street, London, E. C., England.
Elliott, W. E., Superintending Engineer, Goodrich Transportation Co.....Chicago, Ill.
Ellis, John F., Mechanical Engineer.....89 Migeon avenue, Torrington, Conn.
Elmquist, E.....Erebro, Sweden.
Evans, Owen Brooke.....1706 Spring Garden street, Philadelphia, Pa.
Everest, Charles Marion, Vice President, Vacuum Oil Company.....Rochester, N. Y.

Fairburn, W. A., Naval Architect and Engineer, Eastern Shipbuilding Co., New London, Conn.
Fargusson, M...United States Shipbuilding Co., General Offices, 43 Cedar street, New York City.
Ferguson, Wilfred H.....Fairfield Works, Govan, Glasgow, Scotland.
Ferris, T. E.....Care Townsend & Downey, Mariners' Harbor, New York City.
Fletcher, Andrew, Jr., member of firm of W. & A. Fletcher Co.,
Hudson, 12th to 14th street, Hoboken, N. J.
Fletcher, Wm. H., of firm of W. & A. Fletcher Co.....Hudson, 12th to 14th street, Hoboken, N. J.
Folmer, H. V., Draftsman.....S. E. Dep't, Mare Island, Cal.
Foran, George J., with the International Pump Co.,
Residence, 471 Central Park West, New York City.
Forbes, W. D., Mechanical Engineer .....1800 Hudson street, Hoboken, N. J.
Forsyth, Robert, Chief Engineer of the Union Iron Works.....San Francisco, Cal.
Foster, Charles A.....Care Wm. Cramp & Sons, Philadelphia, Pa.
Foster, J. M.....Foster Engineering Co., Newark, New Jersey.
Fotheringham, R. M.....410 Bird avenue, Buffalo, N. Y.
Fraser, J. Imbrie.....Residence, 13 Sandyford Place, Glasgow, Scotland.
Frear, Hugo P., Naval Architect.....Union Iron Works, San Francisco, Cal.

Gabel, John F.....Care Fore River S. and E. Co., Quincy, Mass.
Gardiner, Wm. Howard.....12 Pearl street, Boston, Mass.
Gaskin, Edward, Superintendent Union Dry Dock Co., 516 Norwood avenue, Buffalo, New York.
Geary, D. J., Vice President and General Manager, Oil City Boiler Works,
Bissell avenue, Oil City, Pa.

Gibbs, A. W., Assistant Mechanical Engineer, Pennsylvania Railroad.....Altoona, Pa.
Goodenough, Walter J.....Room 508, Battery Park Building, New York.
Gray, Evan M., Engineers' Department, Donald Currie & Co.....Southampton, Eng.
Griffith, Edwin (Whitworth Scholar), Wallsend Slipway and Engineering Co., Newcastle-on-Tyne, England.
Grubb, George A.....1318 Walfram street, Station B, Chicago, Ill.
Gundersen, A.....P. O. Box 232, Groton, Conn.
Guy, A. E., Chief Draftsman, Gas Engine and Power Co.....Morris Heights, New York.

Hammar, Hugo G., Superintending Constructor, Lindholmen Shipbuilding Co..Göteborg, Sweden.
Hand, H. W.....Wm. Cramp & Sons' Ship and Engine Building Co., Philadelphia, Pa.
Hanscom, I. C., Naval Architect.....Drafting Department, Navy Yard, Portsmouth, N. H.
Harris, Jas. H., Manager, Heine Safety Boiler Co.....1521 Monadnock Building, Chicago, Ill.
Hartley, Geo. B.....Engineers' Club, Philadelphia, Pa.
Hayes, Jos. F.....American Steamship Co., Cleveland, Ohio.
Heald, T. H., President, Black Diamond Coal Co.....Knoxville, Tenn.
Heffernan, J. T., Heffernan Engine Works.....108 Railroad avenue, Seattle, Wash.
Henning, Gus C., Consulting Engineer.....521 W. 142d street, New York City.
Higgins, C. P., Mechanical Engineer.....Babcock & Wilcox Co., Bayonne, N. J.
Higgins, H. C.....81 Beach street, New York.
Hoffman, W. D., care Whittier Machine Co.....53 State street, Boston, Mass.
Hohenstein, A. G., Oil City Boiler Co.....1413 G street, N. W., Washington, D. C.
Hopkins, Albert Lloyd.....Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Horton, F. N.....13 Intervale Park, Dorchester, Mass.
Hoxie, Wm. D., Vice President Babcock & Wilcox Co.....85 Liberty street, New York.
Hughes, Chas. H.....Crescent Shipyard, Elizabethport, N. J.
Hugo, Victor, Chief Inspector, Hartford S. B. I. and I. Co.....Security Building, St. Louis, Mo.
Hyde, Charles E., Marine Engineer, Bath Iron Works.....Bath, Me.
Hyde, John Sedgwick, Superintendent Engineering Department, Bath Iron Works.....Bath, Me.

Janson, Ernest N., Mechanical Engineer...802 Rhode Island avenue, N. W., Washington, D. C.
Jenks, S. G.....Jenks Shipbuilding Co., Port Huron, Mich.
Jordan, S. S., Engineer and Naval Architect.....374 5th avenue, New York.

Katzenstein, L., Mechanical Engineer.....357 West street, New York.
Keough, William T., Consulting Engineer, Room 45, Whittier Building, 15 Exchange street, Boston, Mass.
Kimball, W. E.....1 Robin Hood street, Roxbury, Mass.
King, Frank B., Marine Engineer and Naval Architect...1442 Rhode Island av., Washington, D. C.
Kingsbury, Albert, Professor of Applied Mechanics.....Worcester Folytechnic Institute, Worcester, Mass.
Kirby, Frank E., Engineer, Detroit Dry Dock Co.....Detroit, Mich.

Lacey, C. C., Superintending Engineer, Pacific Coast Co., 2621 Octavia street, San Francisco, Cal.
Laing, Andrew, General Manager, Wallsend Slipway and Engineering Co., Newcastle-on-Tyne, England.
Lake, Simon.....Lake Submarine T. B. Co., Bridgeport, Conn.
Lappan, James.....President, The James Lappan Mfg. Co., Pittsburg, Pa.
Laval, Earl George de, Supt. and Constructing Engineer, Geo. F. Blake Mfg. Co., E. Cambridge, Mass.
Leventhal, Philip.....1 Broadway, New York.
Libbey, Jos. Harold.....Westinghouse, Church, Kerr & Co., 53 State street, Boston, Mass.
Lillie, S. Morris.....328 Chestnut street, Philadelphia, Pa.
Lincoln, J. M.....405 Lenox avenue, New York City.
Livingstone, W. A., Marine Engineer.....12 Woodward avenue, Detroit, Mich.
Longstreth, Chas.....427 N. 13th street, Philadelphia, Pa.
Lovell, Ralph L., Draftsman.....222 49th street, Newport News, Va.

McAllaster, Eugene L., Mechanical Engineer and Naval Architect, 503-504 Pioneer Building, Seattle, Wash.
McClintock, J. E.....Oil City Boiler Co., 39 Cortlandt street, New York City
McDermott, Geo. R., Professor of Naval Architecture....Cornell University, Ithaca, N. Y.
McInnes, John....Superintendent Construction, Bath Iron Works, Bath, Maine.
McMakin, Joseph, Civil and Mechanical Engineer....Box 177, Back Bay P. O., Boston, Mass.
Macalpine, John H., Mechanical Engineer....Harlan & Hollingsworth, Wilmington, Del.
Magoun, Francis P.....15 Wall street, New York.
Magoun, H. A., Superintending Engineer, Maryland Steel Co....Sparrows Point, Md
MacBride, James Douglas.... Care Cramp & Sons, Philadelphia, Pa
Malmquist, H.....Kockums Mek. Werkstads Aktiebolag, Malmö, Sweden.
Marriner, W. W.....Yarrow & Co., Ltd., Isle of Dogs, Poplar E., London, England.
Maschmeyer, A. M. P.....Bureau of Steam Engineering, Navy Department, Washington, D. C.
Mattson, A. George....Machinery Department, Detroit Shipbuilding Co., Detroit, Mich
Meier, E. D., President and Chief Engineer, Heine Safety Boiler Co....11 Broadway, New York.
Mellin, Carl J., Chief Engineer, Richmond Locomotive Works, Residence, 613 E. Leigh street, Richmond, Va.
Mentz, W., Diploma Engineer....Kiel, Weberstrasse 8, Germany.
Mesney, Arthur B. Le Patourel, Draftsman....Bureau Steam Engineering, Navy Department.
Meyer, J. H. F., Marine Draftsman....Bureau Steam Engineering, Navy Department.
Millard, J. W., Naval Architect and Engineer....32 Broadway, New York.
Miller, Walter, Consulting Engineer....1407 Perry-Payne Building, Cleveland, Ohio.
Mills, E., Chief Draftsman....Babcock & Wilcox Co., Bayonne, N. J.
Mizutani, Yoshihiko, Fleet Engineer, I. J. N....Naval Dockyard, Yokosuka, Japan.
Mohr, Louis, Secretary and Consulting Engineer...John Mohr & Sons, 32 Illinois st., Chicago, Ill.
Monteagle, Robert Charles, General Superintendent, Gas Engine and Power Co., Morris Heights, New York City.
Montgomery, H. M., Merchant....1322 Judson avenue, Evanston, Ill.
Mooney, Thomas, Engineer....Delaware River, I. S. B. and E. Works, Chester, Pa.
Moore, C. C.....32 First street, San Francisco, Cal.
Moran, Robt., President and General Manager, Moran Bros. Co....Seattle, Wash.
Morris, Edward T.....1380 Ninth avenue, East Oakland, Cal.
Morton, Richard, Jr.....Morton, Reed & Co., Baltimore, Md.
Mosher, Charles D., Naval Architect and Marine Engineer....1 Broadway, New York.
Murphy, E. J., Consulting Engineer, Hartford S. B. Insp. and Ins. Co....Hartford, Conn.

Nelson, J. A., Naval Architect....General Superintendent, Wm. R. Trigg Co., Richmond, Va.
Newell, W. S.....P. O. Box 1197, Bath, Me.
Newman, Richard L., General Manager, New York Shipbuilding Co....Camden, N. J.
Nicholson, J. H.....Room 1708, Frick Building, Pittsburg, Pa.
Niclausse, J.....24 Rue des Ardennes, Paris, France.
Nickuom, Wm. C.....1614 Diamond street, Philadelphia, Pa.
Nystedt, Thure, Naval Constructor, Royal Swedish Navy, Ingeniör Departementet, Carlskrona, Sweden.

Palen, Fredk. P.....Newport News S. & D. D. Co., Newport News, Va.
Palmer, Nicholas F., Proprietor, Quintard Iron Works....742 East 12th street, New York.
Parsons, H. DeB., Consulting Engineer....22 William street, New York.
Peacock, Edw. L.....Canada Life Building, Montreal, Can.
Pearson, F. S., Chief Engineer, Metropolitan Street Ry. Co., Columbia Building, Room 220, 29 Broadway, New York.
Pell, Harry S., Superintendent....115 Forge street, Akron, Ohio.
Penton, Henry, Superintendent Engineer....1596 W. Monroe street, Chicago, Ill.
Platt, John, Consulting Engineer....97 Cedar street, New York
Post, W. A., Superintendent, Newport News S. & D. D. Co....Newport News, Va.
Pray, Thomas, Jr., Consulting Engineer and Electrician....P. O. Box 2809, Boston, Mass.

Quintard, Geo. W......66 Broadway, New York.

Rafu, Kristian, Chief Engineer, Thingvalla S. S. Co.....Copenhagen, Denmark.
Raynal, Alfred H., Mechanical Engineer.....Bureau Steam Engineering, Navy Department.
Richson, Carl, Naval Constructor, Royal Swedish Navy...Riddarholmen 11, Stockholm, Sweden.
Riley, Geo. N......National Tube Co., Conestoga Building, Pittsburg, Pa.
Robinson, Edward P., Superintendent, The Atlantic Works.....70 Border st., East Boston, Mass.
Rossell, Axel G......Care Wm. Cramp & Sons, Philadelphia, Pa.
Rottmer, H. E......Bureau of Construction and Repair, Navy Department.
Rowell, George A......Babcock & Wilcox Co., Bayonne, N. J.
Rowland, Jonathan, Vice President, Morris, Tasker & Co.....267 S. 4th street, Philadelphia, Pa.
Rowland, Thomas F., Jr., Secretary and Treasurer, The Continental Iron Works, Brooklyn, N. Y.
Rozycki, L. O. Stephen, Draftsman, Bureau of Steam Engineering.....Navy Department.

Salmon, Fred. W., Mechanical Engineer.....127 S. Central avenue, Burlington, Iowa.
Schreidt, Frank, President, Safety Cylinder Valve Co.....Mansfield, O.
Schulze, Henry H......Wm. R. Trigg Co., Richmond, Va.
Scott, Irving M., Vice President and General Manager, Union Iron Works.....San Francisco, Cal.
Scout, Morris C., Chief Engineer, S. S. *Caracas*, Red D Line.....483 Lexington ave., Brooklyn.
See, Horace, Marine Engineer and Naval Architect.....1 Broadway, New York.
Seabury, Charles L......Morris Heights, New York City.
Seymour, J. Alward.....3 Linden Place, Auburn, New York.
Shaw, T. Jackson, Superintending Engineer, The Harlan & Hollingsworth Co....Wilmington, Del.
Shedd, Albert R......Fore River S. and E. Co., Quincy, Mass.
Sillen, Hillmer Fr., Chief Draftsman, Jönköpings Mek. Verkstad.....Jönköpings, Sweden.
Sloan, Robert S., President, Fitzgibbons Boiler Co.....Oswego, N. Y.
Smith, Charles R., Engineer.....Swallowfield, Bushmead avenue, Bedford, England.
Smith, Sommers N......1422 Girard avenue, Philadelphia, Pa.
Smith, W. Poultney, Mechanical and Marine Engineer.....Cramps' Shipyard, Philadelphia, Pa.
Spiers, James, President and Manager, Fulton Engineering and Shipbuilding Works,
San Francisco, Cal.
Steers, Henry, Naval Architect.....Eleventh Ward Bank, New York.
Stephens, W. P., Editor, "The Automobile and Motor Review,"
Thirty-second street and Avenue A, Bayonne, N. J.
Stevens, E. A., President, Hoboken Ferry Co.....1 Newark street, Hoboken, N. J.
Stivers, W. D., Superintendent.....Otis Elevator Works, Yonkers, N. Y.
Stuart, Sinclair, Surveyor to the U. S. Standard Register of Shipping,
Post Building, 16 Exchange Place, New York.
Syme, Jas......Fairfield Works, Govan, Glasgow, Scotland.

Taft, H. S......Box 1443, Providence, R. I.
Takakura, S., Naval Constructor, Imp. Japanese Navy,
Japanese Admiralty, Navy, Tokyo, Japan.
Taylor, Stevenson, Vice President and General Superintendent, W. & A. Fletcher Co.,
Hudson, 12th to 14th streets, Hoboken, N. J.
Taylor, H. Thomas.....C. S. Swan & Hunter, Ltd., Shipbuilders, Wallsend on Tyne, England.
Thomas, Carl C......235 S. Euclid avenue, Pasadena, Cal.
Thornycroft, John I......Chiswick, London, S. W., England.
Thumm, Wm. F......Wm. Cramp & Sons' S. & E. B. Co., Constr. Dept., Philadelphia, Pa.
Thunberg, Ernst......695 Washington street, Bath, Me.
Traill, Robert.....6 Windsor Crescent, Whitley Bay, Northumberland, England.
Tromp, Capt. A......Ryswyk, Z. H. (Holland).
Tucker, Edwin W., Mechanical Engineer.....818 Page street, San Francisco, Cal.

Uhler, George, President, National Marine Engineers' Beneficial Association of the U. S.,
1609 Brown street, Philadelphia, Pa.
Upjohn, Hobart Brown......437 Franklin avenue, Scranton, Pa.

Varney, William Wesley, Mechanical Engineer and Attorney at Law,
712 N. Carey street, Baltimore, Md.
Volz, Wm. E., Mechanical Engineer.....120 Liberty street, New York.
Voss, Ernest, Marine Engineer, Blohm & Voss, Shipbuilders and Engineers...Hamburg, Germany.

Wachsmann, Wm., Mechanical Engineer.....Bureau Steam Engineering, Navy Department.
Wadagaki, Yasuzo, Naval Constructor, I. J. N.....Navy Department, Tokyo, Japan.
Wannop, C. H......Care Alex. Stephen & Son, Linthouse, Govan, Scotland.
Ward, Charles, Engineer and Contractor, Manufacturer Ward Boiler.....Charleston, W. Va.
Ward, B. F., Superintending Engineer, N. Y. C. and H. R. R. Co.,
330 Central avenue, Hoboken, N. J.
Warner, J. B., Chief Boiler Inspector, Hartford S. B. Insp. and Ins. Co.,
306 Sansome street, San Francisco, Cal.
Warrington, James N......1711 South Hope street, Los Angeles, Cal.
Waterhouse, Wm. E., Naval Architect.....54 Devonshire street, Boston, Mass.
Webster, Daniel M......Aultman & Taylor Manufacturing Co., Mansfield, O.
Weir, Geo. Dobie, Manager, Sunderland Engineering Works.....Sunderland, England.
Wellington, F. O......Fore River Engine Co., Quincy, Mass.
Wetherbee, Chas. P., Superintendent of Engineering.....Bath Iron Works, Bath, Me.
Wheeler, Fredk. Meriam, Mechanical Engineer,
Secretary, The George F. Blake Manufacturing Co., 91 Liberty street, New York.
Whitaker, M. M......Foot of Carlaw avenue, Toronto, Can.
White, George H., General Foreman, Oil City Boiler Works.....4 Lincoln street, Oil City, Pa.
Whiting, S. B., General Manager, Calumet and Hecla Mining Co.,
11 Ware street, Cambridge, Mass.
Wiley, Clarence W......Boston Tow Boat Co., East Boston, Mass.
Williams, Sam'l T......1719 E. Lanvale street, Baltimore, Md.
Wills, Alexander.....Care N. N. S. & D. D. Co., Newport News, Va.
Wilson, R. C., Consulting Engineer.....4927 Perrier street, New Orleans, La.
Winant, Wm. E......1912 13th street, N. W., Washington, D. C.
Wintringham, H. C., Naval Architect and Engineer, Hudson Building, 32 Broadway, New York.
Wolvin, A. B......Zenith Transit Co., Duluth, Minn.
Wood, S. L., N. N. S. B. & D. D. Co......232 49th street, Newport News, Va.
Woolson, H. T......Care Gas Engine and Power Co., Morris Heights, New York City.
Wright, R. K......Care New York Yacht Club, 37 W. 44th street, New York City.

Yarrow, A. F., Naval Architect and Mechanical Engineer.....Isle of Dogs, Poplar, London.

Zeiter, Fr., Marine Engineer.....Bülow street, 22, Bremen, Germany.

SUBSCRIBERS.

Admiral Ahmed Pasha, M. I. Mech. E., Engineer-in-Chief,
I. Naval Arsenal, Constantinople, Turkey.
Allen, Louis J., Captain, U. S. N. (retired).....Clifton Springs Sanatarium, Clifton Springs, N. Y.
Ansaldo, Gio......Sestri Ponente, Genoa, Italy.
Arnê, L., Warrant Machinist, U. S. S. *Massachusetts.*

Baltimore Polytechnic Institute.....Baltimore, Md.
Bibliotheque de l'Institute de sa Majeste Nicolas II.....Varsovie, Russia.
Blake Manufacturing Co.....East Cambridge, Mass.
Boston Public Library.....Boston, Mass.
Boutakoff, Alexander G., Lieutenant, Naval Attache, Imperial Russian Embassy,
2010 R street, N. W., Washington, D. C.
Briner, E. Amandus.....1917 Girard avenue, Philadelphia, Pa.
Bureau Steam Engineering Library.....Navy Department.
Bureau C. and R. Library.....Navy Department.

Cammermeyer H. Boghandel.....41–43 Carljahaus Gade, Christiana, Norway.
Carnegie Library.....Pittsburg, Pa.
Commander-in-Chief, Imperial Russian Pacific Squadron.....Port Arthur, China.
Cornell University Library.....Ithaca, N. Y.
Cramp, Wm. & Sons' Ship and Engine Building Co.....Engine Department, Philadelphia.
Crucible Steel Co. of America.....Pittsburg, Pa.
Cruickshank, Alex.....Wm. R. Trigg Co., Richmond, Va.

Delaunay, Belleville & Cie.....St. Denis, Seine, France.
Department Construction and Repair.....Navy Yard, Mare Island, Cal.
Department Mechanical Engineering.....State College, Pa.
Dunlop, D. N., care The Westinghouse Companies Publishing Department,
Westinghouse Building, Norfolk street, Strand, London, W. C., England.
Department of Equipment.....Navy Yard, New York.
Department Steam Engineering.....Naval Academy, Annapolis, Md.
Department Steam Engineering.....Navy Yard, Mare Island, Cal.
Department Steam Engineering.....Navy Yard, New York.

Eaton George M.....P. O. Box 682, Newport News, Va.
Ecole d'Application du Genie Maritime.....140 Boulevard Montparnasse, Paris, France.
Eyre & Spottiswood, Government Collecting Department,
5 Middle New street, London, E. C., England.

Fratelli, Freves.....Via Del Corso, Roma, Italy.

General Storekeeper.....Navy Yard, Brooklyn, N. Y.
(S. E. 5a, Bur., for Cavité.)
German Embassy.....Washington, D. C.
Gildner, A. W.....213 34th street, Newport News, Va.

Hall, Thos.....Superintending Engineer, Mallory Line, Pier 20, East River, New York.
Hardy, J. W.....Casilla 151, Valparaiso, Chili.
Harvard University, Engineering Library.....Cambridge, Mass.
Hughes, Thomas.....H. M. S. *Aboukir*, Mediterranean Squadron, Malta.

Ide, Kenji, Lieutenant, I. J. Navy.....Imperial Japanese Legation, Washington, D. C.
Imperial Naval Engineering College Yokosuka.....Sagami, Japan.
Ito, Y.....249 Kita Shinagawa, Tokyo, Japan.

Judge, Jno. P.....General Electric Co., 227 E. German street, Baltimore, Md.

Kaigun, Daigako.....Naval Staff College, Tsukiji, Tokyo, Japan.
Kamo, J., Fleet Eng., I. J. N.....1306 13th street, N. W., Washington, D. C.
Karljohansverns Verft.....Horten, Norway.
Kazama, T.....Nishikatamachi, Komagomé, Hongo, Tokyo, Japan.
Kenny, Louis H.....15 Gates street, South Boston, Mass.

Manning, Maxwell & Moore.....111 Liberty street, New York.
Mechanics Institute.....31 Post street, San Francisco, Cal.
Michels, Hermann.....Schadowstrasse 14, Dusseldorf, Germany.
Miyakawa, K.....17 Dinsdale Road, Blackheath, London, England.

Nakajima, Y.....185 Honmuracho, Azabu, Tokyo, Japan.
Naval Architect, Department of Engineering College Tokyo,
Imperial University, Tokyo, Japan.
Navy Department Library.....Navy Department.
Newport News Shipbuilding and Dry Dock Co.....Newport News, Va.
New York Public Library.....40 LaFayette Place, New York.
New York Shipbuilding Co.....S. Camden, N. J.
New York Yacht Club.....67 Madison avenue, New York.

Odero, N., & Co., Ship and Engine Builders.....Foce, Genoa, Italy.
Ohio State University, Library of.....Columbus, O.

Patent Office Library, England, Care Messrs. Kegan Paul, Trench, Trübner & Co., Paternoster House, Charing Cross Road, London.
Paton, W. G.....Valparaiso, Chili, South America.
Pearce, R. S., Assistant Engineer, R. N.....H. M. S. *Gladiator*, Malta.
Peters, Chas. G.....The Corners, E. Williston, Long Island, N. Y.
Powel, H. C.....Ferry Works, Queensferry, Flint, England.
Publication Bureau, General Electric Co.....Schenectady, N. Y.
Pusey, C. C.....Susquehanna Boat Co., Havre-de-Grace, Md.

Reale Scuola Navale Superiore, il Signor Direttore della.....Genoa, Italy.
Rew, Frederick G.....112 Cook street, Ithaca, N. Y.

Scientific Library.....U. S. Patent Office, Washington, D. C.
Seattle Public Library.....Seattle, Wash.
Sells, C. de Grave, M. I. C. E......Cornigliano, Ligure, Italy.
Sneddon, J. P., Superintendent, Stirling Co.....Barberton, Ohio.
Snow Steam Pump Works.....Buffalo, N. Y.
Spett, Sotto, Divezione delle Costruzione Navali.....Castellammare di Stabia, Napoli, Italy.
Spett, Sotto, Divezione delle Costruzione Navali.....2d Department, Maritt, Napoli, Italy.
Steiger, E. & Co.....Newspaper Box 298, New York.

Taguchi, K.....8 Nottingham Place, London, W., England.
Tappen, A. B.....263 W. 73d street, New York.

University of Michigan Library.....Ann Arbor, Mich.

Virgilio Giacomuzzi.....Sestri-Ponente, Genoa, Italy.

Webb's Academy and Home for Shipbuilders...Sedgwick and 188th streets, New York, N. Y.
Woodwell, Julian E.....Inspector, Electric Light Plant, Treasury Department.

EXCHANGES.

American Engineer and Railroad Journal.....47 Cedar street, New York.
American Machinist.....168 Fulton street, New York.
American Shipbuilder.....7 Coenties Slip, New York.
American Society of Mechanical Engineers.....12 West 31st street, New York.
Army and Navy Journal.....240 Broadway, New York.
Army and Navy Register.....National Theater Building, Washington, D. C.
Association Technique Maritime.....16 Rue de l'Arcade, Paris, France.

Cassier's Magazine.....World Building, New York.
Club Militar Naval.....Rua do Carmo 43, Lisbon, Portugal.
Collegio degli Ingegneri Navali e Meccanici.....via David Chiossone, N. Y., Genoa, Italy.

Engineering.....35 Bedford street, Strand, London, England.
Engineering Magazine.....120-122 Liberty street, New York.
Engineering News.....St. Paul's Building, 220 Broadway, New York City.
Engineering Record.....100 William street, New York.
Engineers' Club.....1122 Girard avenue, Philadelphia, Pa.
Engineer's Gazette.....36 Fawcett street, Sunderland, England.

Fielden's Magazine.....Gwydir Chambers, 104 High Holborn, London, W. C., England.
Franklin Institute.....Philadelphia, Pa.

Institution of Civil Engineers.....Great George street, Westminster, London, S. W., England.

Journal of Royal United Service Institution .....Whitehall, London, S. W., England.
Journal of the United States Artillery..... Fort Monroe, Va.
John Crear Library.....Chicago, Ill.

Librarian Smithsonian Institute.....Washington, D. C.
Literary Digest.....30 Lafayette Place, New York.
Machinery.....9 and 15 Murray street, New York.
Marine Engineering.....309 Broadway, New York.
Marine Journal.....24 State street, New York.
Marine Review and Marine Record.....39-41 Wade Building, Cleveland, Ohio.
Memorial du Genie Maritime .....Ministere de la Marine, Paris, France.

National Engineer. .....Manhattan Building, Chicago, Ill.
Naval Institute.....Naval Academy, Annapolis, Md.
Northeast Coast Institution of Engineers and Shipbuilders,
4 St. Nicholas' Buildings, West, Newcastle-upon-Tyne, England

Popular Mechanics.....Journal Building, Chicago, Ill.
"Power,".....World Building, New York.

Quarterly Digest of Physical Tests.....1424 N. 9th street, Philadelphia, Pa.

Record of American and Foreign Shipping.....37 William street, New York.

Scientific American.....361 Broadway, New York.
Schiffbautechnischen Gesellschaft.....Schumanstrasse 2 pr., Berlin, N. W., Germany.
Señor Inspector General de Navégacion y Puertos, Ingeniero D. Jorge Duclout,
Ministerio de Obras Publicas, Boletin do O. P., Buenos Aires, Argentine.
Sibley Journal of Engineering.....Cornell University, Ithaca, N. Y.
Société des Ingenieurs Civils.....19 Rue Blanche, Paris, France.
Steamship, The.....2 Custom House Chambers, Leith, Scotland.
Stevens Indicator.....Stevens Institute, Hoboken, N. J.

Technology Quarterly.....Massachusetts Institute of Technology, Boston, Mass.
Tidskrift for Sövesen.....Horten, Norway.

Ufficio Tecnico del Ministero della Marina.....Roma, Italy.

Westerly Public Library.....Westerly, R. I.
Western Society of Engineers.....1737 Monadnock Block, Chicago, Ills.
Wisconsin Engineer.. .....Library of the University of Wisconsin, Madison, Wis.

Yacht, le.....55 Rue de Chateaudun, Paris, France.
Yale Scientific Monthly.....New Haven, Conn.

Zeitschrift Vereines Deutscher Ingenieure.....80 Wilhelmstrasse, Berlin.